

REMARKS/ARGUMENTS

Favorable consideration of this application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 1-32 are pending in the present application. Claims 1, 9, 17 and 25 are amended by the present amendment. Support for the present amendment is found in Applicants' originally filed specification, at least, in Figures 2, 13 and 14. No new matter is added.

In the outstanding Office Action, Claims 1-5, 9, 10, 12-21, 25, 26 and 28-32 were rejected under 35 U.S.C. §103(a) as unpatentable over Kreang-Arekul et al. (U.S. Pat. No. 7,127,090, herein "Kreang-Arekul") in view of Inoue (U.S. Pat. No. 6,961,478) and in further view of Sasada (U.S. Pat. No. 6,714,680); and Claims 6-8, 11, 22-24 and 27 were rejected under 35 U.S.C. §103(a) as unpatentable over Kreang-Arekul in view of Inoue and Sasada in further view of Cahill et al. (U.S. Pat. No. 7,162,102, herein "Cahill").

Addressing now the rejection of Claims 1-5, 9, 10, 12-21, 25, 26 and 28-32 under 35 U.S.C. §103(a) as anticipated by Kreang-Arekul, Inoue and Sasada, Applicants respectfully traverse this rejection.

Claim 1 recites, in part,

a memory configured to store X-ray image data of the plurality of consecutive divisional X-ray images, the X-ray image data including pixel values;

an ROI setting unit configured to establish a region of interest (ROI) around an edge line disposed through a center of an overlapping portion between a reference image and an adjoining X-ray image that is read out from the memory, the ROI being less than the entire overlapping portion and including portions of both the reference image and the adjoining X-ray image;

an index value calculator configured to determine, for each of the overlapped edge portions, an index value based on the pixel values within the ROI;

a gradation calculator configured to determine display gradations for the image data of the adjoining X-ray images, based on the index value;

a gradation processing unit configured to correct the pixel values for the X-ray image data so that the display gradations of the image data of the adjoining X-ray images substantially coincides; and

a continuous pasting operation unit configured to generate a continuous image by pasting together the X-ray image data of the altered pixel values.

Claim 17 recites similar features.

Kreang-Arekul describes a system for combining radiographic images. Specifically, Kreang-Arekul describes that images 50 and 52 can be overlapped to include overlapping area 58. Further, the pixel intensity for each pixel in both images 50 and 52 in the overlapping area 58 is determined.¹ Using these values, the pixels are blended so that the intensity progression between the images is uniform.

However, Kreang-Arekul does not describe or suggest an ROI setting unit configured to establish a region of interest (ROI) around an edge line disposed through a center of an overlapping portion between a reference image and an adjoining X-ray image that is read out from the memory, the ROI being less than the entire overlapping portion and including portions of both the reference image and the adjoining X-ray image, as is recited in Claim 1.

The outstanding Action relies on Inoue as curing the deficiencies of Kreang-Arekul with regard to the claimed invention.

Inoue describes an image correction system that corrects an offset in a number of combined images using a reference image captured before the image to be corrected.

However, Inoue does not describe or suggest an ROI setting unit configured to establish a region of interest (ROI) around an edge line disposed through a center of an overlapping portion between a reference image and an adjoining X-ray image that is read out from the memory, the ROI being less than the entire overlapping portion and including portions of both the reference image and the adjoining X-ray image, as is recited in Claim 1.

¹ Kreang-Arekul, Figures 12-15a.

This is the case, at least, due to the fact that this reference does not describe or suggest any overlapping portion.

Nevertheless, the outstanding Action relies on Sasada as curing the deficiencies of Inoue and Kreang-Arekul with regard to the claimed invention.

Sasada describes a system for properly positioning a combination of serially recorded radiation images. In addition, Sasada describes that an overlap area is identified between an upper and lower image and a plurality of template areas are identified in the lower image. The template areas are then ranked to determine suitability for matching and are matched with template areas of the upper image. The positions of the combined images are then moved based on the matched areas giving more weight to higher ranked areas.

However, as is acknowledged on page 6 of the outstanding Action, the templates are identified separately on the S1 (upper image) and S2 (lower image). Thus, Sasada does not describe or suggest an ROI setting unit configured to establish a region of interest (ROI) around an edge line disposed through a center of an overlapping portion between a reference image and an adjoining X-ray image that is read out from the memory, the ROI being less than the entire overlapping portion and including portions of both the reference image and the adjoining X-ray image.

For instance, nothing in Sasada describes that the ROI (indicated in the outstanding Action as corresponding to the template area) is established around an edge line disposed through a center of an overlapping portion between a reference image and an adjoining X-ray image. As can be seen in Figure 6A of Sasada, the template area is clearly not around an edge line disposed through a center of the overlapping portion.

In addition, in the claimed invention the ROI includes portions of both the reference image and the adjoining X-ray image. Clearly the template areas in Sasada include only portions of the upper image S1 or portions of the lower image S2. Thus, Applicants note that

these templates cannot be held to be equivalent to the ROI of the claimed invention that includes portions of both the reference image and the adjoining X-ray image.

Accordingly, Applicants respectfully submit that Claim 1 and similarly Claim 17 patentably distinguish over Kreang-Arekul, Inoue and Sasada considered individually or in combination.

With respect to Claims 9 and 25, Applicants respectfully submit that these claims also patentably distinguish over the combination Kreang-Arekul, Inoue and Sasada.

Claim 9 recites, in part,

a region of interest (ROI) setting unit configured to establish at least one ROI around a edge line disposed through a center of the overlapping edge portions of the divisional X-ray images, the at least one ROI including portions of each of the divisional X-ray images

Claim 25 recites similar features.

However, none of the cited Kreang-Arekul, Inoue and Sasada references describes or suggests at least one ROI established around a edge line disposed through a center of the overlapping edge portions of the divisional X-ray images. In addition, none of the cited Kreang-Arekul, Inoue and Sasada references describes or suggests that the at least one ROI including portions of each of the divisional X-ray images.

Accordingly, Applicants respectfully submit that Claims 9 and 25 also patentably distinguish over Kreang-Arekul, Inoue and Sasada considered individually or in combination.

Thus, Applicants respectfully submit that independent Claims 1, 9, 17 and 25, and claims depending therefrom, patentably distinguish over Kreang-Arekul, Inoue and Sasada.

Consequently, as no further issues are believed to be outstanding in the present application, the present application is believed to be in condition for formal Allowance. A Notice of Allowance for the claims is earnestly solicited.

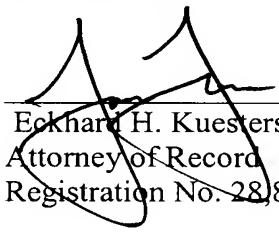
Respectfully submitted,

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